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EXAMINER

TANG, KENNETH

ART UNIT PAPER NUMBER

2127

DATE MAILED: 05/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/772,118

Applicant(s)

RAI ET AL.

Examiner

Kenneth Tang

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 August 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. Claims 1-37 are presented for examination.

#### *Drawings*

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "the scheduling device wherein the standard linear programming technique is used to compute Pareto optimal solutions" (Claim 35) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

#### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 3, 20-23, 27, and 34-37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention:

- a. Claim 3 recites the limitation "the currently pending document jobs in each cell" in line 21. There is insufficient antecedent basis for this limitation in the claim.

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- b. Claim 3 recites the limitation "the shop" in line 24. There is insufficient antecedent basis for this limitation in the claim.
- c. In claim 20, the term "prepending" is indefinite. The term "prepending" is not found in the dictionary. The terms "prepend" and "pending" are. It is not made explicitly clear what "prepending" is trying to refer to.
- d. In claim 27, the term "routed to completed it" is indefinite.
- e. Claim 34 recites the limitation "optimization " in line 24. There is insufficient antecedent basis for this limitation in the claim.
- f. Claim 34 recites the limitation "cost function" in lines 26 and 28. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**4. Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over H.A.M.**

**Van Oijen (US 5,918,988).**

5. As to claim 1, H.A.M. Van Oijen teaches a printing workflow system disposed in a network for coordinating production of a document processing job among a plurality of cells,

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wherein each cell submits a bid to process the document processing job received by the printing workflow system, the printing workflow system comprising:

- searching which one of the cells can execute the job and creating a first subset of cells available to process the document processing job (*col. 6, lines 4-18, col. 8, lines 3-32*),
- a transfer module for transferring information to the first set of cells about the document-processing job (*col. 10, lines 57-58*),
- a receiving module for receiving, bids in response to the information transferred to the first subset of cells to process the document-processing job (*col. 2, lines 66-67, col. 8, lines 3-32, and col. 10, lines 57-58*);
- a selector module for selecting one or more cells to process the document processing job based on information in the bids received (*col. 1, lines 14-16*); and
- a queuing module for dispatching the document processing job to the selected one or more cells for processing (*col. 6, lines 3-8, col. 8, lines 3-32*).

6. H.A.M. Van Oijen fails to explicitly teach a module for searching. However, it is well known in the art and obvious to one of ordinary skill in the art that modules can be used within a program because it is a standard that modules performing various functions are combined and used to make up a program. H.A.M. Van Oijen teaches dealing with a set of cells but fails to explicitly teach using a subset of cells. However, it is common knowledge and obvious in the art that subsets can be used in order to organize data one level further than sets.

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7. As to claim 2, H.A.M. Van Oijen teaches the printing workflow system wherein the printing workflow system stores all information regarding the currently pending document jobs in each cell (*col. 8, lines 3-6*).

8. As to claim 3, H.A.M. Van Oijen teaches the printing workflow wherein the printing workflow system stores all information regarding current document jobs that have arrived in the shop and have yet to be allocated for production (*col. 9, lines 34-44*).

9. As to claim 4, H.A.M. Van Oijen teaches the printing workflow system as recited in claim 1 wherein the print flow assigns priority value to each new document-processing job that arrives (*col. 4, lines 44-53*).

10. As to claim 5, H.A.M. Van Oijen teaches the printing workflow system wherein selector module selects the first subset of cells with the lowest bids (*col. 7, lines 24-27*).

11. As to claim 6, it is rejected for the same reason as stated in the rejection of claim 1.

12. As to claim 7, it is rejected for the same reason as stated in the rejection of claim 2.

13. As to claim 8, it is rejected for the same reason as stated in the rejection of claim 3.

14. As to claim 9, it is rejected for the same reason as stated in the rejection of claim 2.

15. As to claim 10, it is rejected for the same reason as stated in the rejection of claim 4.
16. As to claim 11, it is rejected for the same reason as stated in the rejection of claim 5.
17. As to claim 12, it is rejected for the same reasons as stated in the rejection of claim 1. In addition, H.A.M. Van Oijen teaches determining whether the document-processing job could be accomplished in one cell or a plurality of cells (*col. 8, lines 3-32*), determining the time it would take to process the document-processing job (*col. 7, lines 24-27*), defining timing parameters to accomplish the document processing job (*col. 7, lines 6-23*), and applying the timing parameters to the cell or a plurality of cells to process the document processing job (*col. 5, lines 39-42*).
18. As to claim 13, it is rejected for the same reason as stated in the rejection of claim 2.
19. As to claim 14, it is rejected for the same reason as stated in the rejection of claim 3.
20. As to claim 15, it is rejected for the same reason as stated in the rejection of claim 2.
21. As to claim 16, it is rejected for the same reason as stated in the rejection of claims 1 and 12.
22. As to claim 17, it is rejected for the same reason as stated in the rejection of claim 2.

23. As to claim 18, it is rejected for the same reason as stated in the rejection of claim 3.

24. As to claim 19, it is rejected for the same reason as stated in the rejection of claim 2.

**25. Claims 20-27 and 28-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over H.A.M. Van Oijen (US 5,918,988) in view of Harrington, III, et al. (hereinafter Harrington) (US 6,166,822).**

26. As to claim 20, H.A.M. Van Oijen teaches a matrix for defining operations performed by a printing workflow system (*col. 8, lines 3-33*). H.A.M. Van Oijen fails to explicitly teach a assigning a new operation in the printing workflow system is prepended to the matrix. However, it would be obvious to one of ordinary skill in the art that a new operation (new print job, for example) gets prepended to the matrix because the system refers to the matrix when performing printing processes, so it needs to be prepended for it to be included. H.A.M. Van Oijen fails to explicitly teach a converter module for converting the new matrix into a numerical format that represent the unique ID. However, Harrington teaches converting the new matrix into a numerical format that represents the unique ID (*col. 4, lines 1-15*). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the feature of converting the new matrix into a numerical format that represents the unique ID to H.A.M. Van Oijen's invention because it translates the values to a format useful to the system.



27. As to claim 21, H.A.M. Van Oijen teaches the device wherein the descriptor module assigns a number 1 for each operation that needs to be completed and number 0 if the operation is not needed (*col. 7, lines 37-38*).

28. As to claim 22, H.A.M. Van Oijen teaches the device wherein the new matrix will result into a binary string (*col. 7, lines 37-38*).

29. As to claim 23, Harrington teaches the device wherein the converter module converts the binary string of the new matrix into its decimal equivalent (*col. 3, lines 10-16*).

30. As to claim 24, it is rejected for the same reason as stated in the rejection of claim 20.

31. As to claim 25, it is rejected for the same reason as stated in the rejection of claim 21.

32. As to claim 26, it is rejected for the same reason as stated in the rejection of claim 22.

33. As to claim 27, H.A.M. Van Oijen fails to explicitly teach the method wherein the unique ID is used to determine which cell the job needs to be routed to completed it. However, it would be common knowledge and obvious to one of ordinary skill in the art to use the ID to determine which cell because you have to have an ID to identify the cell to work with it.

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34. As to claim 28, it is rejected for the same reason as stated in the rejection of claims 12 and 20. In addition, H.A.M. Van Oijen teaches matrices elements including a due date of the document processing job (*col. 14, line 12*), a due time of the document-processing job (*col. 5, lines 39-42 and col. 6, lines 46-50*), the number of duplicates needed for the document-processing job (*col. 8, lines 18-21*), and the number of units associated with each operation in the document processing job (*col. 10, lines 28-29*). Harrington does teach the use of strings (*col. 3, lines 14-22*), but H.A.M. Van Oijen in view of Harrington fails to explicitly teach the appending mentioned above be appended into a string. However, it is obvious and well known in the art that strings are a series of characters in a group are standardly used to represent character data.

35. As to claim 29, H.A.M. Van Oijen in view of Harrington fails to explicitly teach the device wherein the string is decimal string. However, it is well known and obvious to have the string be a decimal number because it is a standard format.

36. As to claim 30, Harrington teaches the device further comprising a converter module for converting the string into hexadecimal (*col. 3, line 22*).

37. As to claim 31, it is rejected for the same reason as stated in the rejection of claim 28.

38. As to claim 32, it is rejected for the same reason as stated in the rejection of claim 29.

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39. As to claim 33, it is rejected for the same reason as stated in the rejection of claim 30.

40. **Claims 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Joslin et al. (hereinafter Joslin) (US 6,272,483 B1).**

41. As to claim 34, Joslin teaches a scheduling device for scheduling a document processing job in a printing workflow system (*see Abstract*), the scheduling device comprising:

- a first module for determining whether there are any constraints for optimization;
- a second module for determining whether the cost function is linear; and
- a third module for optimizing the cost function subject to constraints by using standard linear programming techniques.

Joslin fails to explicitly teach having separate modules to perform each functions. However, it is well known in the art and obvious to one of ordinary skill in the art that modules can be used within a program because it is a standard that modules performing various functions are combined and used to make up a program.

42. **Claims 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joslin et al. (hereinafter Joslin) (US 6,272,483 B1) in view of Gregory (Newsgroups: news.answers, sci.answers, sci.op-research), 12/9/93.**

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43. As to claim 35, Joslin fails to explicitly teach the scheduling device wherein the standard linear programming technique is used to compute Pareto optimal solutions. However, Gregory illustrates that it is well known in the art to use the standard linear programming technique to compute Pareto optimal solutions as an approach to solve a linear programming (LP) problem (*page 12, lines 16-33*). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the standard linear programming technique of computing Pareto optimal solutions to the existing linear programming system of Joslin because Pareto is an effective approach for linear programming.

44. As to claims 36 and 37, Joslin fails to explicitly teach the scheduling device further comprising determining whether the document-processing job can be done entirely in one cell and splitting jobs into subjobs when the document-processing job cannot be done entirely in one cell. However, H.A.M. Van Oijen teaches scheduling print jobs by using cells in a matrix and organizing them in a set to a job or multiple sets to a job (*col. 8, lines 3-32*). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the feature of scheduling print jobs by using cells in a matrix and organizing them in a set to a job or multiple sets to a job in order to organize jobs with a cell matrix structure.

### ***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth Tang whose telephone number is (703) 305-5334. The examiner can normally be reached on 8:30AM - 7:00PM, Monday through Thursday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (703) 305-9678. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kt  
4/20/04



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